FIELD APPLICATIONS™

V-GER Polished Rod Lubricator

Reduces Downtime and Equipment Repair Costs

Product Developer: *Rayco Industries*

THE PROBLEM

One of the most common problems with oilfield pumping units is stuffing box failure. The stuffing box on a pumping unit contains packing elements that enable fluids to flow from the tubing to the wellhead flowline without leaking around the unit's polished rod. Most stuffing box failures are caused by lack of lubrication or failure of the lubricant. Either problem can eventually cause the stuffing box packing elements to disintegrate, which may allow well fluids to leak out.

Insufficient or improper stuffing box lubrication can also cause the polished rod to become pitted, scarred, or even broken. The degradation of the metal polished rod and packing elements accelerates dramatically in wells that produce corrosive or extremely hot fluids

Even under normal operating conditions, poor stuffing box lubrication increases friction on the polished rod, which can significantly increase pumping unit power consumption in a field.

When either the stuffing box or polished rod fails, producers face several potential problems—production downtime, deferred revenue, pumping unit repair and labor costs, downhole pump problems, and environmental compliance. These problems are often magnified in remote locations where producers cannot monitor wells as frequently.

THE SOLUTION

Rayco Industries of Bakersfield, California, field tested its new V-GER (pronounced vee´-jer) polished rod lubricating system at RMOTC to determine its effectiveness in extending stuffing box life and reducing operating costs.

The V-GER lubricator applies a continuous flow of a specially-formulated grease to the polished rod to reduce friction between the rod and and packing that can cause heat damage. The lubricator is mounted on the base of the pumping unit. It holds about twelve pounds of grease that is continuously pumped at a rate determined by the operator.

In tests with beam-pumped oil wells performed over seven months at the RMOTC field testing site (NPR-3), the V-GER system lowered operating costs by reducing maintenance, material costs, and electrical requirements. The lubricator also minimized polished rod corrosion and

The V-GER Lubricator installed on a producing well in the steam flood portion of the NPR-3 field.

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enhanced pollution control. The V-GER system worked effectively with extremely hot fluids and in adverse weather conditions.

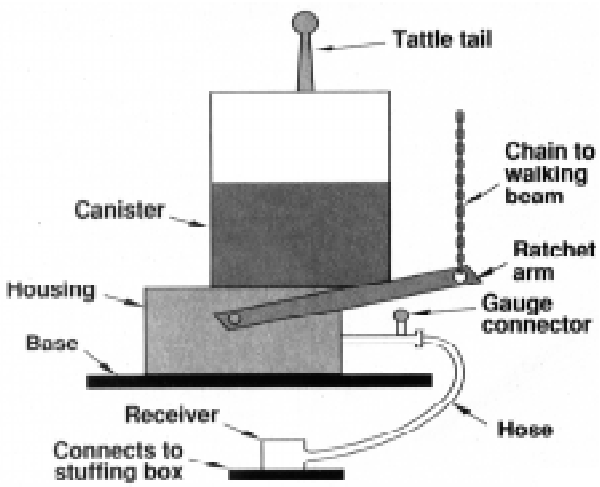
THE BENEFITS

RMOTC tests showed that the V-GER system provides several important benefits for producers:

- Extends stuffing box life by reducing friction between the polished rod and packing that causes heat damage.
- Protects the polished rod from electrolysis and corrosive fluids.
- Lessens the risk and frequency of stuffing box leaks that can affect the environment.
- Reduces labor and material costs for stuffing box repairs.
- Reduces electrical consumption.

THE FIELD PERFORMANCE

The V-GER lubricator was tested on four wells at NPR-3. These wells produce from two formations–the Shannon (SX) at 300 ft and the Second Wall Creek (AX) at 2,300 ft. The SX wells are in the steamflood portion of the Shannon fomation, where wellhead temperatures reach 188° F. The Second Wall Creek wells were selected for testing because they produce corrosive water. The lubricators operated reliably on all four wells in weather conditions that varied from extreme cold to intense heat.



The components of the V-GER polished rod lubricating system tested at NPR-3.

On Well 52-45-SX-10, a problem with the polished rod hanging up and the bridle being thrown from the unit did not recur after the V-GER was installed. On Well 38-1-AX-34, equipped with a 7.5 hp (5.6 kw) energy-efficient motor, electrical consumption (measured with a Dranetz energy analyzer) was reduced by 8%.

The lubricator reduced maintenance time by 36 man-hr/well/year. Costs also were saved because of reduced well downtime and increased stuffing box packing life. On the test wells, the frequency of repacking stuffing boxes was reduced by 50%, from eight to four times per year.

Based on Well 38-1-AX-34 (which has an energy-efficient motor), the initial cost of the lubricator and the grease supply would be recovered in nine months. Results could be even more significant on wells equipped with standard or over-sized motors.

Because grease is a major cost component of the system, modifying the lubricator to apply grease intermittently rather than continuously could further reduce operating cost.

THE NEXT STEP

Rayco Industries has completed development of the V-GER lubricator. The system can be purchased directly through Rayco Industries. The company plans to establish international distribution for the product in the near future.

FOR MORE INFORMATION:

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